The Indian Poultry Gazette.

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FROM THE EDITOR'S CHAIR.

We think we should be failing in our duty if we, before taking the pleasure of writing this, our first Editorial Note, did not express gratitude at the most kindly words used for us by our predecessors in the last Gazette and we feel equally grateful to our numerous readers for having expressed satisfaction with and appreciation of our services to the Poultry Industry in India. We felt, at first, reluctant to undertake such responsible duties as those of Secretary and Editor on account of our multifarious official duties on behalf of the United Provinces Poultry Association, but we have been greatly encouraged to undertake the task by our many readers expressing satisfaction at our taking over charge.

We hope we shall be able to discharge our duties to the satisfaction of one and all. We feel the best way for every reader, to render our task easier, is to co-operate with us to the best of his or her ability and to advise every poultry breeder that he or she cannot do without the Indian Poultry Gazette—the only journal in India devoted exclusively to poultry matters.

What we would chiefly like to ask every one of you, dear readers, is to do something more for the Utility and encourage Research in order to place the Industry in India on a footing equivalent to the one in other countries of the world, where it is considered to be one of the most important that offers relief to the agriculturist in a worldwide economic depression like the present one.

We apologise for some mistakes that were made in print in the last issue. Please read "revival" for survival in the fifth line on page 95, "we" for he in the twentysecond line on page 91 in our predecessors editorial note, and "her" for far in the *third line on page 99.*

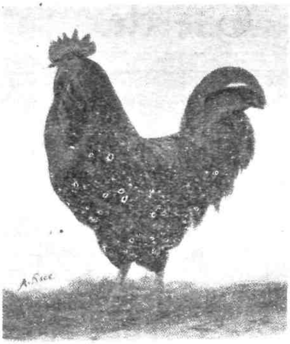
We are indebted to our friend Captain W. Sherrard Smith for his excellent article on "Poultry Housing and Equipment in India" which we consider is the most valuable work on one of the most important problems of poultry keeping in this country. We should be glad to hear of readers views on the subject.

We are glad to inform readers that the Government of Bihar and Orissa has been awfully* good to sanction a grant of Rs. 200 towards staging a Provincial Poultry Exhibition in Patna at the request of our predecessors through the Director of Agriculture *Bihar and Orissa*. We, *on behalf* of the Club, wish to convey to the said Government, and the Director of Agriculture, through our columns, *our most respectful thanks for this kindness* which will materially help the agriculturist in the provinces of Bihar & Orissa. We strongly hope other provincial governments would follow their example. May we now know who, from amongst our members in Bihar and Orissa, would be so good as to volunteer to run the show and earn the gratitude of the agriculturist in that province. We, it is hardly necessary to add, on our part, would help the Show as much as it is possible for us to do.

We would like also to draw readers attention to two other useful articles on "Problems of Artificial

We would invite attention to the letter advertisement for "Sperrfin" poultry in this issue The quality of this stock is so well known that it needs no remarks. Readers should note special points of the offer, namely, not less than six birds to an order (this is the minimum number for a crate to be sent out to India at an economical rate); proportion of cockerels to pullets (cockerels are slightly the more expensive and have to be placed separate from each other in export crates); cash conditions under which orders will be booked; breeds to which the offer applies; insurance terms.

*We understand that Mr. Howard has definitely decided not to send any stock this coming season for sale at the All India Show, so those who contemplate purchasing such stock at the show had better avail themselves of this offer or purchase under the ordinary terms of the displayed large annual advert. of the "Sperrin" Poultry Farm.



AUSTRALORPS.

Mrs. Grain has imported a further pen of this wonderful dual purpose fowl SEE THEM AT THE SHOW and judge for yourselves.

EGGS FOR HATCHING.

No. 1 pen per setting Rs. 25.—Headed by imported cockerel of magnificent type bred from 267 egg dams, mated to 2 imported pullets of 251 egg dams, and 6 of my last year hens specially selected for heavy egg production.

No. 2 pen per setting Rs. 15.—Headed by imported cock, 1st Lucknow 1930, fully acclimatised, proved sire of winners, his son was placed 1st in class Calcutta 1931, mated to 8 selected pullets sired by cockerel placed 2 in class at Calcutta January 1931.

No. 3 pen per setting Rs. 15.—Headed by cock placed 2 in class at Calcutta January 1931, mated to 8 specially selected pullets sired by imported cock now heading No. 2 pen.

WHITE LEGHORNS.

No. 1 pen per setting Rs. 15.—Headed by imported cock of 280 egg strain mated to 10 hens of good utility type and layers of large eggs.

No. 2 pen per setting Rs. 15.—Headed by cockerel whose dam laid 525 eggs in 24 months mated to 8 hens of good utility type and heavy layers of large eggs.

15 eggs sent with each setting in full satisfaction.

MRS. R. GRAIN.

12 **107, BUNGALOW, - - - KANCHRAPARA E. B. Ry.**

GET IT FROM BLACK LAKE

WHITE LEGHORN AND WHITE WYANDOTTE PULLETS AND COCKERELS.

Quantity in Eggs is governed by quality of stock. However good your equipment or care in the management of your Flocks, you cannot get the profitable quantity and size of eggs unless the quality of stock is there. I, therefore, commend the BLACK LAKE strain as real dividend earners.

Every BLACK LAKE birds is a pedigree bird of known parentage. All Pullets are trapnested daily. NO PULLET BREEDING. NO FLOCK MATING. NO BATTERY BROODERS.

All Breeding Stock is Blood-Tested.

Every Egg, Chick and Bird sold is an exclusive product of BLACK LAKE FARM, bred and reared under my own personal supervision. I NEVER BUY IN to supply customers.

PRICES.

According to Pedigree—Single Birds from **£4** to **£7.**
Specially selected for Utility Show-Purposes from **£5** to **£9.**
Trios from **£7, £8, £10** to **£15.**
Two trios from **£12, £15, £18** to **£28.**

Prices are inclusive all charges paid to Indian Port—Live delivery at Port guaranteed.

THE HON. GERALD S. MONTAGU,

BLACK LAKE POULTRY FARM, - - - EGHAM, SURREY, ENGLAND.

Cables:—" EGGS, EGHAM ".

Incubation" and "Modern Turkey Rearing" this month and hope the latter would benefit many interested in Turkey Rearing which, though profitable, has not yet been paid much attention to.

We would advise readers to do this now as this is a source of great profit in the "Season"

The article under the heading "Minerals—Their Use And Abuse" deserves to be given serious thought.

We should very much like to hold an All India Poultry Conference during the All India Poultry Show at Delhi and shall be glad to know what our readers think about the idea. The advantages of such a conference, where problems requiring solution can be usefully discussed, are obvious, and, as we hope to have some eminent poultry breeders at the next All India, we would strongly recommend holding it.

We are in communication with the Delhi Authorities regarding the All India, and hope to announce the Secretary at least, if not the dates, in our August issue. In connection with the latter we should be glad to receive suggestions.

Another item at which every one should feel gratified is that prices of eggs have slightly gone up.

One of the most important problems which should engage the attention of every poultry farmer is "marketing," and, unless we organise this on some sound basis, we cannot do much good to the poultry raiser in India.

PROBLEMS OF ARTIFICIAL INCUBATION.

1. Fundamentals of Incubation.

By Alexis L. Romanoff.

This is a lecture by Mr. Alexis L. Romanoff delivered sometime ago at the Incubation School held at Cornell University and is a valuable contribution to the poultry industry. We shall try to publish his other two lectures in subsequent issues.—*Editor.*

The incubation of a bird's eggs, or growth of the embryo, like the growth of any living being, is governed by natural laws. These laws involve :—

A. The quality of hatchable eggs in respect to the activity of the reproductive cell.

B. The quality of hatchable eggs in respect to their nutritive value or adequacy of nourishment to the developing embryo.

C. Suitable environment before and specially during incubation.

The secret of artificial incubation depends largely upon our knowledge about these natural laws, and this knowledge is limited by the amount of experimental work done in the field of incubation.

A. The active reproductive cell.

The life of a bird, like lives of individual organisms of higher animals and plants, begins from single cell, called the reproductive cell. This cell, with proper nourishment and suitable environment, has power to carry on all vital processes—metabolism, growth, and reproduction, which are the essential and distinctive characteristics of a living being. This reproductive cell grows and multiplies by dividing itself in two, four, eight, etc. The new cells grow to full size and segregate themselves into groups of special function forming the various tissues (muscles, bones) and organs (heart, liver, eyes, etc.) of a new and highly—developed animal.

A bird's egg is a typical reproductive cell. At the time of fertilisation, which occurs in the body of a bird during egg formation, there is only one very minute cell, which possesses the power of growth and the transmission of specific qualities from cell to cell, and so from one generation to another.

At the time of laying, a hen's egg, for instance, has already sixty-four or more cells, as the result of the division of the primary cell. The group of cells can be observed with the aid of a microscope, and also can be distinguished with the naked eye as a whitish spot floating on the surface of the egg yolk.

After laying, if an egg is cooled, the growth and multiplication of cells ceases. The length of this inactive stage of an egg is limited by the individual vitality of the reproductive cell. However, a reasonable length of time of keeping eggs under suitable environment would permit a further growth and multiplication of cells and the development of the embryo. The activity of a reproductive cell is determined largely by inheritance, that is, the power of transmitting this activity from generation to generation. Among inherited factors affecting the various stages of the activity of a reproductive cell, and consequently influencing the hatching quality of eggs, the following are known: fertility and sterility, strong and weak germs, high and low embryonic mortality and high and low vitality of hatched chicks. All these desirable and undesirable inherited factors are usually found within an individual family of hens. Therefore, in order to get eggs with active reproductive cells, rigid selection of breeders and layers of hatchable eggs is absolutely indispensable. This selection of hens can best be done by the biological method that is, by actual testing of eggs in the incubator.

B. Adequate Nourishment.

Among the important natural requirements for life maintenance, growth, and reproduction of both plants and animals is a supply of nourishment in one or another form. Plants use for their nourishment a soil rich in organic matter (muck), impregnated with various salts such as those of calcium, phosphorus, and iron, and moistened with water. Animals eat according to their natural habits, either meat (wolf, tiger, dog) or green plants (cow, goat, sheep) or both (pig, man).

During the prenatal development of an animal, the nourishment for the newly—growing individual is supplied in two different ways. In mammals—like

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Latest Price List on Application.

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MISSION POULTRY FARM, ETAH, U. P.

SPECIALIZES IN :—

DUAL PURPOSE EXHIBITION AND UTILITY R. I. REDS.
EXHIBITION AND UTILITY MINORCAS.
EXHIBITION AND UTILITY WHITE LEGHORNS.

EGGS FOR HATCHING.

R. I. REDS, EX-UTILITY ... **Rs. 30/-** per Dozen.	UTILITY MINORCAS ... **Rs. 18/-** per Dozen.
R. I. REDS UTILITY ... **Rs. 18/-** per Dozen.	EXHIBITION LEGHORNS (Dewar's) ... **Rs. 24/-** per Dozen.
EXHIBITION MINORCAS (Imported Pen) ... **Rs. 30/-** per Dozen.	UTILITY LEGHORNS ... **Rs. 18/-** per Dozen.

Packing and despatch free. 15 eggs sent to the Dozen.

UNTIL FURTHER NOTICE ALL EGGS FOR HATCHING HALF PRICE.

BREEDING STOCK FOR SALE.

Cocks, Cockerels, Hens, Pullets, Exhibition White Leghorns Rs. **15/-**, **20/-** and **25/-** each.
Utility White Leghorns Rs. **10/-**, **15/-** and **20/-** each.

Crate and Freight extra at cost.

SATISFACTION GUARANTEED.

1. A. E. SLATER, *Manager.*

dog, cat, or man—this nourishment is provided to the embryo by the circulation of the mother's blood; in birds, the embryo is seperated from the body of the mother in the typical form of an extruded egg. The egg must, therefore, have this provision of stored food material, and this food material must be a balanced ration so that the embryo can grow and develop normally. For example, a bird's egg is provided with material to meet all the nutritional requirements of the developing embryo within the egg up to the time of hatching.

Therefore we find in an egg such parts as yolk, albumen, and shell, which furnish abundance and variety of properly balanced and adequate nourishment, which is absolutely indispensable for the survival of the growing embryo throughout the incubation period. Among the most important food constituents are proteins, fats, carbohydrates, minerals (calcium, phosphorus, sulphur, iron), and vitamins. Besides these, there is water, which is indispensable for all metabolic functions of an animal. There is present a variety of enzymes, which facilitate the utilisation of food nutrients by the embryo. All these food constituents must be in proper physical state and in proper chemical proportion so that the embryo can utilise them at the time when it needs them.

Of course, we do not yet know what is a perfect hatchable egg, but we certainly know that eggs are not alike. The flock consists of a number of individual hens which are all different, and therefore their eggs will also be different in respect to adequacy of stored food which is necessary for the future embryo. Common observations tell us that each hen lays her own characteristic egg as far as size, shape, colour, and quality of shell are concerned. There may be slight and insignificant variations in the quality of eggs, but as a whole it is true that each hen conforms to her characteristic type of egg. This conformation of the individual hen to her specific type of egg is a well known fact in our general experience. If this is true, then a logical assumption can be made that the bulk of stored food which we find in the egg is also an individual characteristic of each hen. It is understood, therefore, that the eggs vary in their nutritive value to the embryo, also in their reproductive or hatching quality.

These variations in the nutritive value of egg—constituents to the embryo are due to three factors: (1) heredity, (2) individuality of the hen, and (3) physical condition of the hen. The first two factors, namely, heredity and individuality of the hen, are beyond our control, except by elimination of unsatisfactory hens as breeders and producers of eggs for hatching. The third factor, physical condition of a hen, is somewhat controllable and depends upon the following :—

(1) Season of the year.
(2) Age of the hen.
(3) Methods of feeding.
(4) Methods of housing.
(5) Presence of disease and vermin.

The season of the year has a natural influence on the instinct of mating physiological activity of the reproductive organs, and the general physical condition of a hen. Eggs laid in the mating season have a stronger and more active reproductive cell. It is reasonable to suppose, therefore, that the season of the year influences the formation of the constituents of the egg, resulting in seasonal variations in both fertility and hatching quality of eggs.

The age of a hen has influence primarily on the vitality of germs and of chicks hatched. Scientific work and experience show that the best quality of hatchable eggs may be obtained under ordinary conditions from the second to about the fourth laying season.

The method of feeding influences primarily the composition and structure of an egg. That is, inadequate, unbalanced, or unnatural feeding may result in the formation of eggs incomplete in their chemical composition or physical structure. There may be a lack of some chemical constituents proteins, fats, carbohydrates, or minerals; there may be a lack of enzymes which facilitate the utilisation by the developing embryo of the food nutrients present in an egg ; there may be lack of vitamins or of some other still unknown, yet vital substance which harmonises the growth and the development of a new individual within an egg.

Methods of housing have an indirect influence on the production of hatchable eggs, by influencing the physical condition of a hen exposed to damp or dry air, to impure or pure air, to draughts, etc.

Disease or vermin may cause disorders of function in the body of a hen and result in production of incomplete, or even defective, eggs.

In general, the influence of the physical condition of a hen on the hatching quality of eggs can be easily controlled by provision of sanitary quarters, proper feeding, and proper management.

C. Suitable environment.

Environment plays an important rôle in the life of plants and animals for instance, a seed of a tropical plant could not develop in a northern climate; nor could a polar bear be happy under a tropical sun.

The embryo which is destined to develop outside of the mother's body, such as a bird's embryo, is extremely sensitive to environment, so that the embryo will develop only under the conditions specified by nature. Should the environment be unsuitable for a fertilised egg before or during incubation, the embryo invariably will die, regardless of the activity of its reproductive cell and the nutritive value of its egg contents.

The eggs that are intended to be used for hatching should be carefully handled. Caution should be exercised in preventing the further growth of the reproductive cell after the egg is laid until the time when the egg is put into the incubator. This can be attained by keeping the hatchable eggs at a temperature below the so-called physiological zero (about 68° F.) and above the freezing point (32° F.) Another important point to consider is to prevent the spoiling of the nutritive value of the egg content by changes of temperature, dry air, strong odours, and harmful and poisonous gases.

(To be continued)

ITS A LIE

Said doubting Thomas when shewn a photograph of a Giraffe, "There is no such animal." There are some like Thomas, and some others who are jealous of the consistent successes of "**Sperrin**" birds, ever ready to say that it is impossible for us to breed year after year and export to our clients in India the **quality** birds we export at our comparative low inclusive prices. These Dismal fanciers, disappointed with their own stock and sadly disappointed with the continuous success of their wiser brother fanciers who have imported "Sperrin" strains, naturally take upon themselves the job of belittling "Sperrin" strains, and unconsciously give us a good advertisement, their lack of ordinary intelligence being obvious to most. For example, it has been said that we have no farm and that we buy and export our winners each year. Do they imagine that we can buy and export the quality birds we do at our prices? If so they credit us with being a wonderful philanthropists. They cannot buy similar quality birds elsewhere in England at our prices. They know it well. And our farm is, as we have often advertised, open to inspection at all times, and visitors from India always welcomed. Our farm has been inspected by the Poultry Experts of the Punjab and Bombay and favourably commented upon. One of the smallest but most select farms in England. Quality, quality and yet more quality, everywhere, in every single pen, and so select and compact that the whole is worked by just our family. Call yourself, or if you cannot, ask some friend to call. Another brainwave of these Dismal people; they noticed that "Sperrin" birds generally wore sealed pedigree legbands at shows (such bands are permissible under show rules in India and "Sperrin" birds are proud of their origin); of course, they saw it: Our birds and I presume any others with sealed legbands were favoured; they must be of course as they always took the majority of the prizes. Alas for their wisdom. At the last All India show one of our clients removed the sealed leg bands from his birds and yet he practically swept the board. At the last All India show, under the difficult conditions there, "Sperrin" birds won for their owners no less than **Ten 1sts, Ten 2nds., Three 3rds., Five V. H.C's., One H.C. and Eleven Cups and Specials.** Can any exporter, or all other exporters put together, approach, not to mention, beat that? No matter what the conditions; no matter who the judges; no matter whether the judges know us personally or not; no matter whether the judges dislike or not the consistent success of "Sperrin" birds; they continue to win, and will do so. The secret is, good **quality** birds, carefully selected for Indian conditions, and attention to all matters connected with the welfare of the birds en route to India, coupled with our personal practical experience of everything connected with poultry for India. Losses enroute over a period of 8 years is much less than one per cent, while not a single bird has been lost en-route during the last three years' Stamina? Well, we guess so. "Sperrin" birds are

BRED to LIVE; BRED to LAY; and BRED to PAY.

Probably the strongest class of Rhode Island Red (cockerels) ever seen at a show in India or the East was that at the last All India. "Sperrin" cockerels were placed, 1st, 2nd, 3rd, V.H.C. & H.C., leaving just one solitary card, a H.C., for other birds. If the male is half the breeding pen what does that result mean to India? Again all awards made in Wyandotte cockerel and pullet classes and also Sussex cockerel and pullet classes, and Anconas went to "Sperrin" birds. Almost a clean sweep too for our birds in Minorcas. Down in Leghorns, a 3rd in cockerels being highest placed bird, the Leghorn that was probably the most admired Leghorn in the show being unplaced !

It most certainly **IS A LIE** if you imagine that on account of the consistent successes of **"Sperrin"** birds they are likely to cost yon more in the future. The quality this season is better than ever; we have more than ever; the inclusive charges for live delivery at Indian port will be lower than ever.

CAN THEY LAY?

Mr. Simmonds of East Ham got an average of 25 eggs per bird during December, the worst month of the year, from "Sperrin" Reds and Sussex. The leading pen of A.O.V. Heavies in the Herts Laying Test is Sussex and we supplied the owner of this pen with cockerels for his breeding pens two years back when the actual birds were bred; and his Sussex originated from us. Minorcas we sent Mr. Yule averaged 25 eggs per month. This week we received a repeat order for Leghorns and Wyandottes, making the third year in succession we have supplied this client with pullets, his intention being to replace all other strains with "Sperrin" birds after two years experience, the gentlemen being an egg farmer pure and simple.

MATINGS FOR SEASON 1932.

Rhodes.—Extra Special Pen 1, purely exhibition. Extra Special Pen 2, all females layers of eggs exceeding 2¼ ounces in weight, many over 2½ ounces, cockerel from dam laying 268 2¼ ounce eggs, pullet year. Pens 1, 2 & 3 mated for dual purpose, standard bred Reds, excellent layers of large eggs. We export only real Reds, Red to the skin, not birds full of smoke in undercolour masquerading under the name of Reds.

Sussex.—Extra Special Pen 1, dual purpose, exhibition-utility. All eggs over 2¼ ounces. *Male the best we have ever bred for type and colour and from a 2¼ ounce egg dam.* Three other pens mated of slightly less quality.

Minorcas.—Pen No. 1, exactly the same pen as used previous year. Typical Minorcas, utility exhibition, full of quality and females layers of eggs from 2¼ to 2¾ ounces. Pen 2 a good quality pen of younger birds.

White Leghorns.—Extra Special Pen 1. Headed by a rare cock, bred from 289 egg dam, large and full of quality and has bred many winners. Selected hens layers of eggs not less than 2¼ ounces, all being typical Leghorns. Extra Special Pen 2 similar except headed by cockerel bred from 284 egg dam. Three general pens of slightly less quality. No Leghorn eggs incubated during December, January, February and March of less than 2¼ ounces in weight; minimum weight accepted during April 2⅛.

White Wyandottes.—Pens 1 & 2, same as used in 1931, and which bred the winning wyandottes exhibited at the last All India. Large eggs and plenty of them combined with type.

PRICES.

According to pedigree and quality. Single cockerels from £. 3 to £. 5 for utility *and £3 to £12 for exhibition.* Pairs, cockerel and pullet from £5 to £7-10 for utility, and from £5 to 15 for exhibition. Trios, cockerel and two pullets, £6 to £10 for utility *and £7-10 to £20 for exhibition.* Quartette, cockerel and 3 pullets, from £7-10 to £11 for utility and £10 to £24 for exhibition. Cockerel and 5 pullets, from £10 to £14 for utility. Two trios *utility from £11 to £15.* Special quotations for genuine enquirers for larger quantities. Above are minimum and maximum prices to act as your guide. Whatever you pay my *reputation stands for a square deal for you and* value for money. As a gentleman was kind enough to say at the last All India—"Howard never let any one down and never will". Over one hundred pounds worth *definitely* booked (have received deposits) for coming export season already so your birds will not be lonely.

GEORGE HOWARD,
"SPERRIN" POULTRY FARM,
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Record Laying Stock

Twice Winners of Laying Trials

in England.

Sittings per Rs. **15/-** a doz. Reduced from Rs. **20/-** Cockerels from 6 months old from Rs. **10/-**. Pairs, I cock I hen from Rs. **20/-** per pair. Trios from Rs. **30/-** according to quality.

Reductions in prices solely to make room for new importations.

M. WARD.

Red. GABLES,

Shillong,

(Sole importer of pedigree Light Sussex in Assam.)

12

ENGLAND'S

LEADING POULTRY JOURNAL.

THE POULTRY WORLD

is edited by

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assisted by

WILL HOOLEY, F.Z.S.,

and a brilliant staff of contributors.

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Leghorn eggs @ **Rs. 7/-** per doz.
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Sittings from the best Imported strains.

Ex-Ut- **R. I. Reds** - Rs. **10/-** Per sitting of 15

Ex-Ut- **Wh. Leghorns** - Rs **10/-** Per sitting of 15

Day old chicks from the above breeds Rs. **15/** per dozen.

Packing and postage free.

Enquiries for stock birds invited.

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IMPORTED DECEMBER 1931.

Black Leghorns.—(Tennyson Fawkes)
White Wyandottes ... (Sperrin)
R. I. Reds ... (Sperrin)
Black Leghorn and Wyandottes Rs. **18-** per sitting of 15, R. I. Reds. Rs. **15/-**.

Ex-Ut Wh. Leghorns.—Australorps, Minorcas, Rs **10/-** Basras, Ut R. I. Reds Rs **7/-**.

Prices reduced to encourage poultry breeding. 10% reduction to members of I. P. Club. Young Stock and Chicks for Sale.

My stock won many 1sts, 2nds and 3rds also specials at the 1931 All India, Cups and eight places Allahabad 1932.

Quality Second to None

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My numerous wins at this year's

ALL INDIA

Fresh stock imported this year. Sittings and young stock available and booked in strict rotation.

Breeds:—**R. I. Reds**, Minorcas, Wh. Leghorns, Wyandottes, L. Sussex and Chittagongs.

Prices per sitting of 15, N. R.
Chittagongs ... ... Rs. **12/-**
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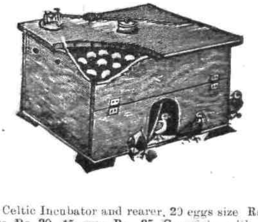
Capt. S. R. CARROLL.

Deoli.

12 **RAJPUTANA.**



The Celtic Incubator and rearer, 20 eggs size Rs. 2 30 eggs Rs. 30. 45 eggs Rs 35 Complete with be English Thermometer. Capsule and printed instructio Profitable Poultry Farming in India Booklet Re. "Eggon" one packet makes twelve fowls lay conti nuously six months Rs 2. "Preserveg" preserves 5 eggs ans. 6. Tick Proof Perch Brackets Rs. 2-8 pa Egg testing lamps Rs. 3. Coloured celluloid rings fow size ans. 4. Numbered rings ans. 8. Chick rings ans. per dozen. Safety egg boxes ans. 12. Automatic foun tains chick Rs. 1-8. Fowl size Rs. 2. Chick troug Rs. 1-8 Best British made Incubator Capsules Rs. Thermometer Rs. 5. Flint and limestone grit chic size fowl size 7 lbs. Rs. 1-4. Chick rearing meal 5 lb Rs. 2. Poultry laying meal 7 lbs. Rs. 2. Poultry Remedi D. R. Cholera and Diarrhoea cure D. R. chicken Po cure D. R. Vim Tonic pills. D. R. roup cure "Ticklo kills ticks, all Rs. 2 each Full detailed illustrate list free. ROSS I. P. G. Poultry Appliances.

IGATPURI G. I. P.

12.

MINERALS—THEIR USE AND ABUSE.

Light on a Knotty Problem.

The following article proves how carefully breeders should handle minerals in the feeding of their flocks.

As children emerge from the swaddling clothes of infancy, they begin to realise that they have a personality of their own and try to assert their independence. This "I won't" stage is often both a matter of a great deal of annoyance and amusement because one naturally realises the distinct limits of their developing knowledge. The science of animal nutrition is right now in a similar stage and many socalled "experts" are rashly asserting that they know it all and insisting on having everything their own way in exactly the same style as used by the two and three year-old children.

Actually our knowledge, like the child's, is changing and increasing rapidly almost day by day.

There is no better example, or none more appropriate at the present time, than some of the new things that we are learning about the proper feeding of growing birds.

Proteins, carbohydrates, fats and fibre are basic elements of any feed. They have been known longer than any others and, therefore, probably more is known about them. However, just what these elements do, what they are and how and why those that are similar in analysis sometimes vary so widely in their action are questions that indicate clearly that even in these fields there still remain many worlds to conquer.

The next phase of nutrition to engage the attention of investigators was that of minerals. The homely records of long-forgotten poultrymen of centuries past show how they knew that sulphur and iron and lime and salt and certain other minerals were helpful to their hens. This they have learned entirely by observation and comparison of results. For over sixty years, various commercial mixtures of minor mineral necessities have been available to American poultry raisers. Years ago, scientists and authorities called such mixtures "fakes"—to-day, their position is reversed because investigators have had their own beloved science show them beyond question the necessity and importance of an adequate supply of the proper minerals in any ration.

With the rapidly increasing knowledge of proteins, carbohydrates, fats, fibre, and minerals, there still remained effects that could not be explained on that basis and which resisted the cleverest chemists and keenest-eyed microscopists. And so the mysterious illusive vitamins were "discovered" and isolated.

The Opposite of Rickets.

Even vitamins have not completed our knowledge of the basic facts of nutrition. Many troubles clearly due to faulty nutrition continue to occur. For instance, birds grown on feeds known to be amply potent in the anti-rachitic vitamin D, and having access to plenty of direct sunshine, continued to suffer from "leg weakness" and the deformed legs that hereto-fore had been attributed entirely to the lack of sunshine vitamin. Apparently their feed had plenty of nourishment and all the vitamin D needed to enable them to utilise the bone-forming calcium and phosphorus content in the feed, yet the trouble continued. In other cases, often where there was very much less vitamin D, there was far less leg trouble.

It was this sort of thing that caused scientists to begin to question the probable importance of the calcium-phosphorus balance in the ration of growing chicks. Calcium and phosphorus are the two most important mineral elements involved in bone formation and are, of course, proportionately more necessary for growing birds than adults. This idea of "balancing" minerals involves two factors that have heretofore been largely disregarded in poultry nutrition, namely, certain minerals being present in exact and proper amounts and bearing a definite ratio or relation to one another.

Hit-or-Miss Won't Do.

In other words, feed mixers can no longer say—"Minerals? Oh, we'll just add a couple of pounds of bone meal and some phosphatic limestone in order to be sure that we have plenty of calcium and phosphorus. It doesn't cost much, so let's use plenty." Not at all! Too much is just about as bad as too little. Hit-or-miss methods can never make good, profitable feeds.

While it may seem to be digressing at this point, we might mention, perhaps, that there is a growing suspicion among many able scientists that some of the benefits that we frequently ascribed to vitamins in the past are actually due to the presence of certain mineral elements in a "balance" that causes them to act as more effective catalysers of the proteins, carbohydrates, fats, etc.

Since this article is designed as a simple, non-technical, discussion on the subject of mineral balance, particularly as related to calcium and phosphorus for growing birds, we won't go into the details of the valuable research work on the subject which has been done during the past years at Wisconsin, Ohio, New York, Pennsylvania and other State institutions.

A Chinese proverb says—"Give me a picture and save your thousand words." Good! Here are some pictures of young, growing birds that are suffering from the effects of feed lacking in proper mineral balance. Every one of these worthless, weak-legged, crippled birds is permanently ruined. They lose valuable money for any breeder whose flock contains such fowls. The birds shown were from a healthy standardised strain bred for test purposes. They were fed a popular growing mash formula with the addition of a sufficient supply of vitamin D potent oils to insure against any possible lack of vitamins, but the ration had never been balanced in calcium and phosphorus. Study the pictures and I can save a thousand words in describing the results.

The picture which contains two deformed birds with crooked body and deformed bones almost everywhere will be given with the balance of the article.

In practically every flock of any size, you have seen some birds like these. For every one with such prominent outward evidence of an improper mineral balance of their ration there are several times as many suffering from the same deficiency but lacking the dramatic external signs. Regardless of their appearance every growing chick that does not receive a proper calcium-phosphorus supply is weakened and less likely to be profitable.

What do we Know?

Now, just what has been determined on calcium-phosphorus balance? *Let's deal with the conclusions*, omitting all the laborious research that was necessary before we could arrive at them.

In the first place, this balance applies to the entire ration (total daily feed intake) and not to any one feed. For that reason, in figuring it, everything that the chicken eats during the day must be taken into consideration. Fortunately, most scratch mixtures have a fairly average calcium-phosphorus content which ordinarily is not easily varied. As a result, the mineral balancing of the modern ration can be done through the mash.

Phosphorus seems to be the more critical of the two elements. That is to say, an improper amount of phosphorus, particularly an over-amount, will show its ill effects quicker than an improper amount of calcium.

Proper calcium-phosphorus balance does not entirely eliminate the need of vitamin D, but a mineral-balanced feed does enable growing birds to show better results on rations of a lower vitamin D content. A mineral-balanced feed is a much safer and, therefore, more profitable feed. Plenty of vitamin D enables birds to use more completely whatever calcium and phosphorus is present.

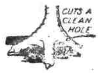
With a sufficient supply of vitamin D present in the feed, a healthy growing chick will require a minimum of about 2/3 of 1 per cent. of true calcium in its ration. The average ration generally contains well in excess of this amount.

Too Much Phosphorus.

Under the conditions of the foregoing paragraph the phosphorus requirements of a growing chick will be less than $\frac{1}{2}$ of 1 per cent. of the ration. And, here's the joker! Almost invariably rations naturally contain considerably more phosphorus than this amount. That's what unbalances the feed and seems to cause the trouble. Where does this phosphorus come from? It's in the natural mineral content of the commonest grains, it's in the bone that constitutes a good deal greater percentage of the meat scrap and fish meal than you ordinarily realise, and it comes from a dozen other unrealised sources. In a properly balanced mash, the phosphorus content must be kept within definite safe limits and it must be balanced with the calcium. In some formulas this residual phosphorus makes balancing very difficult.

The actual ratio that the calcium must bear to the phosphorus in order to get proper results, fortunately, is somewhat flexible, and usually varies from about equal parts to 2·2 parts of calcium to 1 part of phosphorus. Where calcium is present in greater proportions than $2\frac{1}{2}$ of calcium to 1 of phosphorus you can be pretty certain that you are going to have some trouble, and 3·3 parts of calcium to 1 of phosphorus has been proven absolutely dangerous. The writer has seen numerous mash formulas recommended in which, beyond doubt, the calcium ratio was so great as to warrant terming such formulas absolutely dangerous.

(To be continued)



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2.

MODERN TURKEY REARING.

IS IT A PRACTICAL PROPOSITION FOR PROFIT?

By EDMUND BURR.

The following contribution is based mainly on one year's experience with the *artificial hatching* and brooding of turkeys, so the writer wishes to point out to readers that where advice is proffered it must simply be taken as the writer's opinion and not as hard facts that must not be departed from.

The average weight of individual members of a turkey flock killed at Christmas ought to be in the neighbourhood of 17 to 20 lbs. (about 8½ to 10 seers) each. At the price now ruling for feeding stuffs these birds can be fed to that weight from hatching at about Rs. 7 each. Fortunately the greatest demand for good quality birds comes at Christmas, and we are well aware that the public in general thrust their hands somewhat deeper in their pockets at that season than is usual. Wholesale prices are rarely below 1*s.* 3*d.* (about 14 annas) per pound (½ seer). With a little calculation it will be seen that the average turkey leaves rather more than 50 per cent. above feeding cost. Bearing these facts in mind, why not rear some? Where the poultry farmer has fully developed all his available acreage the rearing of turkeys to maturity is out of the question on anything but a small scale.

Now if we take the case of a keen poultryman starting a farm here in many cases turkeys might be reared and found to be an additional source of income. In many cases the beginner takes over several acres with the ultimate view of gradually building upon and enclosing the entire farm. The beginner has a very uphill struggle if he has a limited capital, not only has he to live but new equipment must be bought each year. For the first few years these vacant acres, even if cultivated, will prove little but an expense and trouble, and few poultry farmers find *corn* growing a congenial business and fruit farming always takes several years to establish itself into a paying proposition.

During the last 10 years the poultry industry has gone forward faster than any branch of agriculture. Both with the artificial hatching and rearing and modern feeding the art of chicken rearing on a large scale with minimum losses has practically reached a state of perfection. This state of perfection, however, has a long way to go in the case of turkey rearing. Why is this the case? We may safely assume 90 per cent. of the turkeys reared in this country are reared by farmers. Farmers rear them as a side line, and not for a living, so no great attention is given to turkeys. Losses are usually from 10 to 40 per cent. and this is considered quite natural, and nothing to worry about. I have come in contact with farmers who annually rear hundreds of chickens on intensive lines with success. They realise the advantages gained during the chick stage over rearing by broodies and coops. Ask the greater number of these farmers to rear turkeys in a similar manner and a chorus of voices exclaim: "It can't be done. Incubator hatched turkeys are too weak to live." "More than half die in the shell." "If you can't hatch them so, it stands to reason you can't bring them up under a hover."

Last March, when I decided to try my hand at artificial turkey rearing I had all the above remarks thrust at me. I have tabulated the actual results—not only are they interesting, but they speak for themselves.

HATCHING.

A.	B.
Hot Air Incubation.	Natural Hatching.
66 eggs	66 eggs
12 clear (removed)	10 clear (removed)
8 addled	9 addled
3 hatched (died within 12 hours)	2 crushed in nest
	6 hatched (died within 24 hours)
—	—
23	27
Result 43 Turkeys	Result 39 Turkeys.

NOTES.—Under A: No previous experience with incubators whatever. A few eggs were over 10 days old, none of which hatched. Under B: 10 years' previous experience. None of the eggs were more than 4 days old. The broodies had daily attention and sat well.

The conclusion we can draw from this is that a reliable incubator correctly manipulated will hatch turkeys' eggs equally as successfully as broody hens. Now we will take the results of natural and also of artificial rearing and here the figures are even more surprising.

REARING.

A.	B.
By Hover in House.	By Broody Hens in Coops.
Losses: Hatching to maturity (when killed Christmas)	Losses: Hatching to maturity (when killed Christmas)
2½ *per cent.*	20 *per cent.*

NOTES.—Under A: No previous experience with hovers whatever.

Under B: 10 years' previous experience.

We can safely draw the conclusion that the artificial rearing of turkeys during the chick stage, if conducted on the correct lines, is preferable to natural rearing by broody hens, coops, etc. I should like to point out that no losses were caused by vermin. Under A the loss was due to "black-head", and under B losses were due to both "black-head," and the chicks getting wet and cold during bad spells of weather.

The artificially hatched and reared turkeys thrived best at the start, and kept ahead right through. Not only this, but the labour and anxiety on this flock was considerably less than on the other.

When killing time came, all the best and heaviest birds were in flock A, and practically all of these turkey cockerels turned the scale at 25 lbs. (about 12½ seers). It seems quite certain that it is of the greatest importance to give turkey chicks a good start

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2

off in life, and this start is more affectively accomplished by artificial measures than by natural methods.

Considering my lack of previous experience with incubating and brooding, my methods must not be taken as established facts. To a great extent I have simply been experimenting, but by results obtained, my readers can safely follow, and I hope, improve upon my methods.

INCUBATION.

Use a reliable machine; run at 102½ degs. Keep water trays full throughout.

Test eggs on 10th day, and remove felt No. 1. If the machine is a dual thermometer type run at 103 degs. in egg tray and 84 degs. in nursery; 84 degs. or thereabouts is easily regulated by the use of one or more or no felts. (Remove felt No. 2 at 20 days).

Turn eggs three times daily but do not cool. The last 10 days turn eggs with hands wetted in warm soft water and throw remainder on the floor of incubator house.

If the machine has a moisture device use it the last 10 days. This is more important with wooden machines than with metal ones.

Stop turning on 26th day.

Allow the thermometer to rise a degree when hatching and keep the door closed. If it worries you go out for the day.

BROODING.

Use a large hover. One 30 ft. square is suitable for 50 chicks. Both a large and small burner are an advantage, and also a water well for humidity. Do not worry about a thermometer. I did not use one. If the turkey chicks huddle round the lamp they are too cold; push themselves outside the curtains, too hot: , huddle in one certain spot, there is a draught; bunch in small lots under the hover, the heat is OK.

Regulate the lamps, or the hover top, or curtains to get desired result. Turkey chicks get used to a hover just as quickly as chickens do.

For the first few days stand the complete hover on a clean bag, cut open and laid over the litter. This stops the chicks eating the litter, which is most harmful. Feed under hover on small squares of cardboard for the first two days. Commence feeding as soon as possible.

Space does not permit me to go into detail with the methods and feeding as applied to intensive turkey chick rearing, but possibly I shall be able to in another issue of the JOURNAL.

The Indian weights within brackets have been given for the convenience of readers—*Editor.*

PRACTICAL HINTS ON POULTRY HOUSING AND EQUIPMENT IN INDIA.

By Capt. W. Sherrard-Smith, M.C.

Introduction.

Why has this article been written when there is so much literature on the subject of Poultry keeping in India?

It is because I am convinced that the methods of housing poultry advocated by eminent authors are not practical.

I acknowledge the labours of those authors for their most valuable advice on Poultry keeping in general, but that they have gone adrift on housing problems is an open secret.

Will the management of some of the large Poultry Farms in India honestly say that their houses are free of Ticks?

While accepting the principles laid down in these text books as correct, the houses do not in practice, afford all the qualities attributed to them.

One eminent writer asserts that the most important item of Poultry keeping is Feeding. What is the use of correct feeding if the fowls are incorrectly housed? The reverse is also true, but whereas faulty feeding can be corrected and proper feeding conducted on regulated lines without any additional cost, improperly constructed houses once made are white elephants for ever. And only after a great deal of expenditure can fresh ones be built, or the old ones modified if made of suitable material.

The house.

The essential requirements for a suitable house must answer in all respects to the items numerated below, in order of merit:—

1. Must be Vermin proof.
2. ,, ,, Easily cleaned.
3. ,, ,, Cheaply and effectively disinfected.
4. ,, ,, Cheaply constructed—suitable alike to the poor villager and moneyed fancier.
5. ,, ,, Adaptable under the eaves of the poor villager's hut, John Citizen's outhouse verandah, of the specially built shed of the Commercial farmer.

6. Must be Permanent and yet Portable.

7. *Other essential requirements such* as damp and wind proof, warm and cool as the season demands, are factors easily controlled, and a practical breeder will have no difficulty in making modifications to suit requirements when he has installed one or more of these houses which I am about to describe, and which I will in future refer to as the W. S. house.

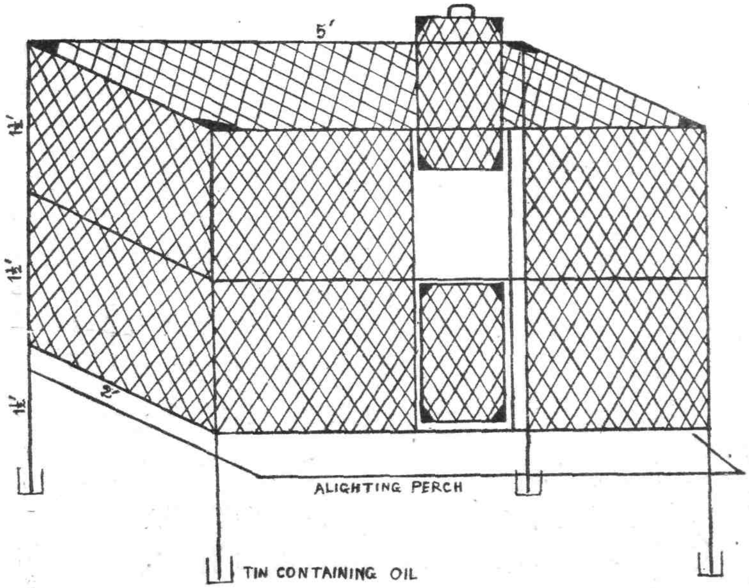
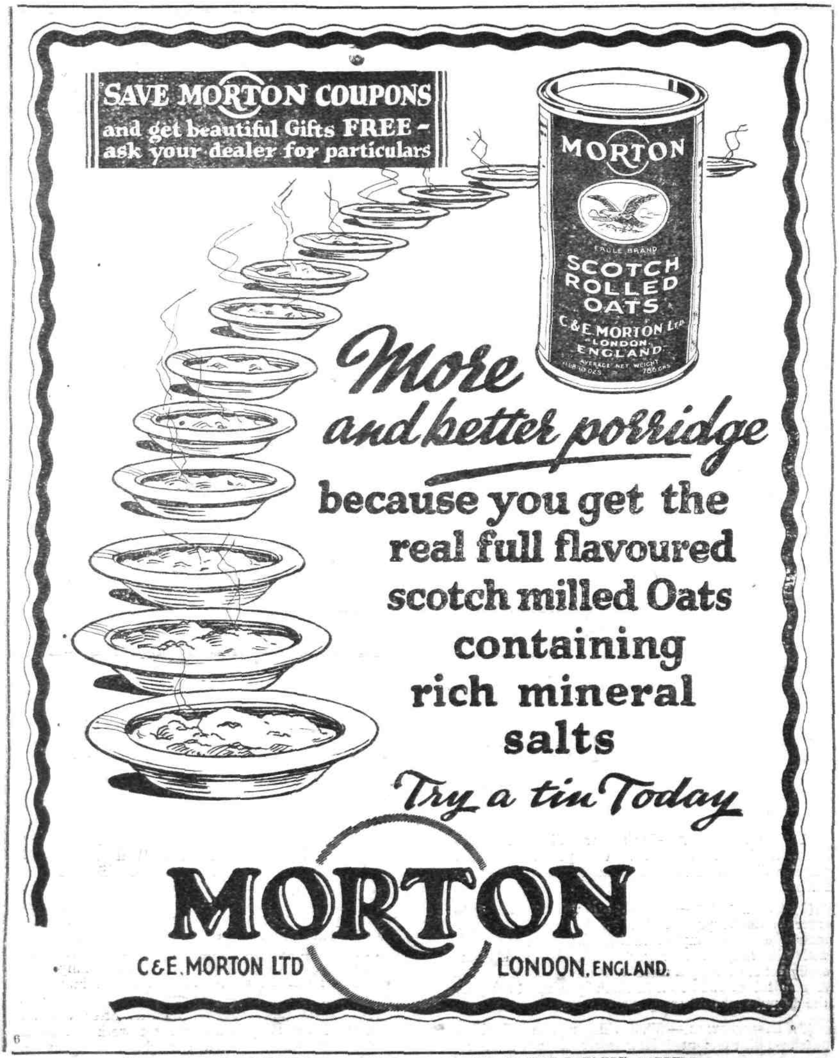


Fig. 1. W. S. (A) Type.

(1) VERMIN PROOF.—Look at the diagram of the house itself, Fig. 1 is a W.S. (A) type of house. A glance will show you that the entire house is VERMIN PROOF.

(2) CLEANLINESS.—A house into which you have to enter for the purpose of cleaning, becomes at once a messy job. By simply removing the front door, and with the help of a scraper, the job is quickly and easily done, even by a mere lad mounted on a stool. A handful *or two of clean earth sprinkled* evenly on the droppings board completes the job.

(3) DISINFECTING.—What villager can afford to purchase disinfectants? How many advanced fanciers ever do before the damage is done? How many of us who keep poultry as a hobby, ever think about it? *Take it from me very few indeed.* Well then how is the house disinfected "Cheaply and Effectively"? Did I say cheaply? Well I mean at no cost at all—Just this—remove the perch (which is the only wooden part of the house). Move the house away from anything inflamable, (two people can lift it with ease) fill every nook and corner of it, with dried leaves, straw, twigs, paper, in fact any thing, that will burn; put a match to it, and in a minute the house will be as free of vermin as the day it was made! I do this every six months after which a coating of tar is applied to the iron work to freshen it up. The money which I might have spent on disinfectants is kept in my pocket.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(4) COST.—The cost of the house will work out to about Rs. 12, will accomodate sixteen full grown birds kept in the most fastidious manner, and twenty four birds on the more intensive system with little or no discomfort to the birds. Even with twenty four birds in each house the birds will be happier, and conditions far more sanitary than those of 80 per cent. of poultry fanciers who claim to *keep* poultry.

(5) ADAPTABILITY.—The house may be placed anywhere—under an old cowshed. Under a verandah roof, even under the eaves of a house.

(6) PORTABILITY AND PERMANENCY.—By opening a few nuts the whole house falls to pieces and tied in a suitable bundle will fit under the seat of a Railway Carriage or at the back of an *ekka*, the one pony conveyance seen in almost any village in Northern India. The house should last a life time. Taking this at three score year and ten, the cost will work out to a few annas a year. Why, the repair bill alone for the usual type of house will work out to many rupees a year !

(7) CONTROLABLE FACTORS.—Provided these houses are placed under a shed which should also provide protection on three sides from sun and wind, no further protection will be required for the greater part of the year. During the winter months old gunny bags are tied round the house on three sides and the top. If necessary the front may also be covered leaving at least six inches at the top for air. Bran is usually supplied in sacks, and I save these for the winter, after which they are burned as they stand on the houses. The sacks or other material used, may be removed, cleaned and stored for the following winter if necessary.

W. S. (A) TYPE CONSTRUCTION.

Angle iron $\frac{3}{4}'' \times \frac{3}{4}'' \times \frac{1}{8}''$ bent to form a rectangular shape 5 feet long by 2 feet wide. A piece of flat iron 3 inches long by $\frac{3}{4}$ inch wide and $\frac{1}{8}$ inch thick is rivetted on so as to join the two ends together. Triangular pieces of flat iron $\frac{1}{16}$ inch thick with $2\frac{1}{2}$ inch sides, are rivitted to the four corners to make the frame secure. Three such frames are required. Thin galvanised sheeting is fixed to the top of two of these by turning the ends over so as to fix them to the angle iron. These will function as the floors or droppings board of the top and bottom compartments respectively. The third frame is fitted to the top of the house and will function as the roof or top of the house. The lowest floor or "shelf" only will require holes to be made along the angle iron at intervals of 3 inches, for fixing the wire netting which forms the sides of the house.

Now make the four legs of angle iron $1'' \times 1'' \times \frac{1}{8}''$. Each of these $4\frac{1}{2}$ feet long. $1\frac{1}{2}$ feet from the bottom holes are made and the bottom "shelf" is bolted on in this position. $1\frac{1}{2}$ feet above this, the top "shelf" is bolted on. $1\frac{1}{2}$ feet above this again the third rectangular frame is bolted on. The making of the remainder of house is easily followed from the diagram. A strip of wire netting of $\frac{1}{2}$ inch mesh is laid over the top of the house. Another strip of wire netting of the same mesh, three feet wide, is run round the house from door-post to door-post. The bottom selvedge edge of the netting is fixed to the bottom "Shelf" by means of the holes in the angle iron made for the purpose, while the top selvedge edge is attached to the wire netting laid accross the roof of the house.

The door side posts are made from flat iron $1'' \times \frac{1}{8}''$. Flat iron of similar dimensions is fixed to the top rectangular shape, in such a manner so as to permit of the door sliding in from the top. Another piece is fixed exactly in the same manner to the floor of the top compartment, and a piece of one inch angle iron is fixed to bottom floor in such a manner so that the door comes to rest on one of its wings, while the other wing prevents it from slipping outward. The door is made of angle iron $\frac{3}{4}'' \times \frac{3}{4}'' \times 1''$ with wire netting. The door is actualy made in two parts one for the lower and one for the upper compartment. Both slide in from the top, the door of the upper compartment resting on the lower door. At night both compartments function as roosts, while during the day the lower one serves as nests.

The perch is only 3 inches high, in two parts to permit of easy removal. Two small blocks of wood each 3 inches high are nailed to each end of a batten $2\frac{1}{2}$ feet long 2 inches wide and 1 inch thick. Two such perches are placed on the droppings board of each compartment end to end, to form a continuous perch through the length of the house. An alighting perch may be either fixed to the house, or fixed to four legs and placed in front of the entrance. In the diagram this is shown fixed to the house by means of bolts.

W. S. (B) TYPE CONSTRUCTION.

The construction of this type of house is nearly the same as the W. S. (A) type. The only modifications are as follows:—

(1) Holes are made along the angle iron of the top "shelf" on the front side only, for fixing the wire netting.

(2) No holes (for fixing the wire netting) are made along the front angle iron of the bottom "shelf" but along the other three sides only.

(3) Five separate nest boxes are provided in the lower compartment by fixing partitions made of thin galvanised sheeting.

(4) An iron rod is passed through these partitions two inches from the top and an inch from the front on which the trap-doors are suspended.

Note :—This type of house is necessary only when trap-nesting is practised.

PRACTICAL NOTES.

WHEN SHOULD THEY LAY ?

A question that poultry breeders generally ask centres around the length of time that should elapse between hatching date and the time a Light breed should come into lay. It is, of course, well known that a Leghorn or Ancona, Minorca or Campine, will come into lay much sooner than would a Rhode Island Red or Sussex ; this is due to the more rapid attainment of maturity.

Lights should be ready to start their season's work when they are about five and a half to seven months old, the latter age being the most preferred. Should the bird have first seen the light of day in April, the correct month for her to start production would be late in September or early October. If every poultry-keeper could have his own way he would arrange matters so that all his pullets commenced to lay on the first of October, as from that time eggs begin to go up in price, and the best profits are made. An egg in October is worth two at the present *time.*

There is always the danger that early hatched (February or March) Light breeds will begin to lay during August, some even in July. This is a state of affairs to be discouraged. Such birds, after laying a small number of small eggs, will suddenly drop off *into a neck moult. This moult will take them weeks* to survive, and they will not produce any further eggs until after the turn of the year. Even should they not moult, the danger is that their eggs will be perpetually small and hardly worth producing.

Unfortunately, once a bird shows signs of laying *it is no easy task* to stop her. The only thing one can do is to cut out mash from the feed altogether and to shift the birds from one house to another. The latter part of the business will stop them from becoming settled down, and unless a bird is allowed to settle it will not lay. An all-grain diet will not harm them for a couple of weeks, growth will not stop, but the egg organs will simply be deprived of the nice easy "living" that is so necessary for them when eggs are to be forthcoming in plenty.

BLOOD SPOTS IN EGGS.

Poultry-keepers are often at a loss to know what causes blood spots in eggs and how they can be stopped.

These spots are brought about by a slight rupture of one of the blood vessels of the oviduct. Often this condition rights itself without any treatment, but in a bad case the food supply should be restricted to give the oviduct time to heal. Carefully regulate the amount of soft food, see that it does not contain too large a quantity of meat or fish meal, and, if necessary, feed on grain alone for a time. Do not cut down the green food or take away the grit. The above treatment may cause a stoppage of eggs for a time, but when the hen resumes laying she should produce normal eggs. Eggs with blood spots are quite all right for consumption—they can be used for *cakes or pastries.*

Often a pullet just coming into lay will produce these eggs, in which case treatment is hardly necessary, as *in nine cases out of ten the trouble will* right itself.

HOW TO CHECK LATE MOULT IN EARLY HATCHED PULLETS.

It is a well-known fact among poultry-keepers that *hens do not lay very many eggs during the moulting* period and poultrymen who specialise on early hatched pullets and are primarily concerned in the production of market eggs should beware of a late moult in the early hatched pullets.

FOR SALE.

Pure Bred Rhode Island Cockerels.

One Dozen of the above Birds in Prime condition Bred from Imported Stock at Rs. 7/- each or Rs. 13/- per pair.

ALSO

Magnificent Turkey Cocks and Hens at Rs. 9/- each or Rs. 17/- per pair.

Both Cock Birds, in Splendid condition, and Hens available.

The Occupier,
GIELLE T. E.,
Rungli Rungliot P. O.,
N. E. BENGAL.

A few loose feathers found on the droppings board or on the floor of the pen where the pullets run is a sure indication of faulty feeding and that a neck moult has started, and at this time, if not already done, the lights should be turned on either at night or in the evening, and it should be remembered that they are for the purpose of giving the birds a chance to eat an increased amount of food. Unless the birds are induced to do this the lights will be of little benefit.

It will usually take from a week to ten days for the lights to make very much difference in the production of eggs, but if the lights are turned on at once when the first sign of moult is noticed, they will do much to check further moulting and also to prevent those from starting that have not already dropped any feathers. Of equal importance at this time is a properly balanced ration, and to see that the birds are getting the right amount of protein and other food nutrients. Quite a common mistake among farm poultrymen is to give an excess amount of grain and not allow the pullets to consume enough mash food, which is often responsible for slowing up production and which is generally associated at this time of the year, when the pullets are hatched early, with a neck moult. The birds may be induced to eat more mash by giving them each day at noon, some of their regular laying mash moistened to a crumbly state with skim milk, butter milk, or semi solid, buttermilk diluted with water. To this should be added some succulent food, such as cabbage or other leafy plant growth. It has been found that in case of pullets which are intended for breeders the following Spring, that the short rest such as the pullets take while neck-moulting in the Fall, results in a material increase in the size of the eggs when they start laying again, however, the neck moult of the early batched pullet is the cause of a considerable reduction in egg yield and profit, hence, every possible effort should be taken to avoid a moult with the early hatched pullet.

MOORLA UTILITY POULTRIES.

GUINEA FOWLS EGGS

For hatching Rs. 4/- per setting of 15 eggs, post or rail free.

No replacements.

Mrs. L. L. HARMAN,

Ramgarhwa, B. & N. W. Rly.

Dist. Champaran.

? ? ?

**Questions under this heading are answered free of charge on this page.
Letters should be addressed—BUFF ROCK,
C/o. The Hon. Editor, I. P. GAZETTE and marked "Query".
Where readers desire an individual reply they should enclose a stamped addressed envelope and a fee of As. -/8/- is charged.**

Mrs. Pattarson from Shillong asks if Black Salt instead of Rock Salt can be given in Mineral Mixture.

I don't think there is any harm in using Black Salt instead of Rock Salt but I should prefer the latter.

Individual reply has been sent to Mr. T. W. Reed of Lahore.

A SPECIAL OFFER.

This is an advertisement for the famous "Sperrin" strains of poultry, charged at usual advertisement rates, so those not interested may switch off.

We have had a splendid season, both in hatching and rearing, and while we have exceeded our usual 2,000 chicks from our best pens, the rearing being extra good we have now a large surplus over and above the usual 300 specially selected birds we reserve for our breeding pens and for export to India. This surplus can, as usual, be disposed of locally, but the quality is such that we can easily select a further 500 head for export of such a standared that they will not disgrace the good name of "Sperrin" birds. We have extended our accomodation here by five new houses: we hope to add another five houses in the autumn.

Last year we made a special offer through the I. P. C. Secretary of exporting utility birds at Rs. 20 per pullet and Rs. 25 per cockerel, provided not less than 30 birds ordered. The offer was made late and several would be importers delayed taking advantage of it so that our incidental expenses connected with exporting birds under the offer were increased and we lost on the experiment.

This year we offer you these surplus birds at Rs. 20 per pullet and Rs. 25 per cockerel, all charges, except insurance, paid to Indian port. Conditions are, orders for less than six birds not accepted and proportion of 1 cockerel to 5 pullets. If a greater proportion of cockerels is required, an extra Rs. 5 per cockerel. Stock will be good sound utility birds typical of their breed with no glaring defects and specially selected for breeding. Not show stock but at the same time it will not disgrace you or us if sent to All India Show. For instance stock exported at same price last season won several first and other prizes at Calcutta and one client won 4 cups and 8 certificates at Allahabad show. This offer applies only to Rhode Island Reds, White Wyandottes, White Leghorns, Black Minorcas, and Light Sussex and is subject to these surplus birds being unsold at time order is received. No order will be booked until minimum of 50% of cash is received by us: balance of cash must be received before birds are exported and should be received not later than end September. We will guarantee live delivery at Indian Port for an additional 10%, but would point out that not a single "Sperrin" bird has been lost on voyage from any cause during the last three years. We thus leave the matter to you. Proposed to send birds end October or early November but will send at any time provided not less than 30 birds are ordered, or if a lesser number then on payment of additional Rs. 10 to cover extra cost this end. Cash to be remitted to us either by bankers draft or Money Order.

A rare opportunity for those desirous of obtaining real good utility stock at a cut price. An opportunity to stock a small yard with a single pen or for those desirous of commencing a poultry farm. For the latter we could cut a bit further provided order totalled not less than sixty birds in which case could send at all round figure of Rs. 20 per head. Think it over, but we must emphasize that when present surplus is sold, either locally or for export the offer autometically closes. Address:—Geo. Howard, "Sperrin" Poultry Farm, Langley, Hitchin.

SMALL CLASSIFIED ADVERTISEMENTS.

Advertisements are accepted under these columns at annas four per line, minimum charge Re. 1, for each additional line annas four extra. No additional charge is made for a box number.

Sale.

FOR SALE. Eggs from pure Game birds (Asil) Rs. 12/- per doz. Orders in rotation.
2

POULTRY PILLS. The only remedy for Cholera, Roup, etc. Rs. 3/- per hundred. S. Armour, Lovedale, Nilgiris, 6.
2

FOR SALE. "A firm in Holland dealing in *poultry food and seeds solicits enquiries for ant's* eggs from new crop. Large stock at moderate prices C.I.F. Calcutta. Enquiries may be sent to Messrs. *Corn van Beusekom, Arnhem. Holland.*
1

"FOR SALE. Tamiin 40 egg incumbator in excellent condition. Rs. 100/- F. Simmons, Kulladakurichi, P. O. Tinnevelly District."
2

FOR SALE. Surplus Wh. Leghorn Cockerels. 8 months old. Direct from Dewar's strain. Price including freight and crate Rs. **18/-** each. Corbet, Landale Clarks Charmugria. Dist. Madaripur, Bengal.
3

Exchange.

TO EXCHANGE. One pair surplus superfine Asils for a really good pair of Partridge Wyandotte, Buff Rock, or Jersey Black Giants. Also one equally good pair Asils for a Bull Mastiff or Bull terrier dog. Reply Box No. 43 Indian Poultry Gazette Office, 11, Havelock Road, Lucknow.
2

Wanted.

Situations Vacant.

Holiday Resorts.

Advertiser is willing to take paying guests on her Poultry Farm near a popular hill-station in the Punjab. Quiet open air life.

Particulars from Box No. 45, I. P. G.